DESCRIPTION OF A NEW SPECIES OF EUCALYPTUS FROM THE MONARO DISTRICT, N.S.W.

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(Plates xxviii.-xxix.)

Eucalyptus parvifolia, n.sp.

Arbor parva, umbrosa, alta pedes viginti trigintavə (raro quadraginta), trunci diametro unciarum duodecim ad duodeviginti. *Folia tenera* ovata nec longiora una uncia, opposita, decussata, superficie inferiore pallida, nec alia plerumque folia sunt arboribus minoribus quam decem ad duodecim pedes. *Folia matura* lineali-lanceolata ad ovato-lanceolata, longa uncias duas et dimidium, sæpe opposita, plerumque adunca ad extremum. *Gemmæ* sessiles, parvæ, operculo conicali ad obtusum, breviore quam calycistubus, pedunculis axillaribus, planatis sæpe oppositis, longis circiter unam lineam. *Flores* in umbella quinque sexve, raro septem. Antheris versatilibus mediocri magnitudine, cellis fere parallelis, paulo latioribus ad imum, glande parva. *Fructus* globoso-truncatus, diametro raro plus quam duarum linearum, interdum contractior ad orificium, valvis non exsertis. *Cortex* levis, colore cinereo vel plumboso. *Materia* colore roseo, mollis et fragilior.

Loc.—Regio plana prope fontem fluminis Kybeani.

A small umbrageous tree reaching 20-30 feet high, rarely 40 feet, with stem-diameter of 12-18 inches.

Juvenile leaves ovate, under 1 inch long, opposite, decussate, under side pale, usually the only foliage on trees up to 10-12 feet high. *Mature leaves* linear-lanceolate to ovate-lanceolate, up to

2½ inches long, often opposite, the tips usually hooked. *Buds* sessile, small, the operculum conical to obtuse, shorter than the calyx-tube, peduncles axillary, flattened, often opposite, about 1 line long. *Flowers* five or six in umbel, rarely seven. Anthers versatile, of medium size, the cells nearly parallel, rather broader at the base, small gland. *Fruits* globular-truncate, rarely exceeding 2 lines in diameter, sometimes slightly contracted at the orifice, valves not exserted. *Bark* smooth, dull gray to lead colour. *Timber* pale pink, soft and rather brittle.

Hab.—Flat land near the head of Kybean River.

Its affinities are with *E. acaciæformis* Deane and Maiden, *E. stellulata* Sieb, *E. aggregata* Deane and Maiden, and *E. eugenioides* Sieb., var. *nana* Deane and Maiden.

It differs from both *E. acaciæformis* and *E. aggregata* in the bark, which is fibrous, while that of *E. parvifolia* is smooth. The leaves of the former two soon become alternate, while many of those of the latter remain opposite, even when the trees are full-grown, or much longer than is usual with the great majority of Eucalypts.

It is of interest to note that *E. aggregata* is associated with *E. stellulata* from the Lithgow-Orange district in the north, to the upper part of the Shoalhaven River in the south, between Braidwood and Cooma, but has not been recorded from Monaro. On the Upper Kybean, however, *E. parvifolia* appears to take the place of *E. aggregata*, with which it has considerable affinities, and occurs in similar situations to *E. stelullata*.

E. parvifolia resembles *E. stellulata* in bark (partly), fruits and habit, but differs absolutely in foliage, both as regards venation and disposition.

It resembles *E. eugenioides* var. *nana* in the shape of the juvenile foliage and fruits, but differs in bark, timber, anthers, and mature foliage.

The retention of a very large proportion of the small oppositely arranged leaves on mature trees is one of the most striking characteristics of this new species, hence the specific name.

Leaves of this Eucalyptus were procured and distilled at the Technological Museum. Messrs. Baker and Smith report on the oil as follows :

The oil obtained from the leaves of this species by steam-distillation is of excellent quality, and consists very largely of eucalyptol. In its general characters it corresponds to the essential oils obtained from the members of the "Gum-Group" of Eucalypts, and, therefore, closely approximates to the oil distilled from *Eucalyptus globulus*, although it is even richer in eucalyptol than the oil from that species The rectified oil is slightly yellowish, and, as is common with the crude oils of this group, contains a small amount of volatile aldehydes. The amount of ester present was but small. The oil contained a small quantity of dextrorotatory pinene, but phellandrene was quite absent. No less than 93 per cent. of the crude oil distilled between 167° and 190°C., and in this fraction the eucalyptol was determined by the resorcinol method, and calculated for the crude oil. The yield of oil is unfortunately not great, and 271 lbs. of leaves with terminal branchlets gave only 29½ ounces of oil, equal to 0·681 per cent. When rectified, the oil from this species would produce an excellent oil for pharmaceutical purposes.

The crude oil had the following characters :—

Specific gravity at 15°C.=0·9177

Rotation a_D in a l-dcm. tube= + 3·6°.

Refractive Index at 25° C.=1·4678.

Soluble in 1·15 volumes 70 per cent. alcohol by weight.

Saponification number of ester with free acid=5·6

If calculated entirely as ester there was 1·96 per cent. considered as geranyl acetate.

Eucalyptol (by the resorcinol method)=83 per cent.

The large fraction (93 per cent.) had specific gravity at 15° = 0·9155; rotation a_D + 3·5°; refractive index at 27° = 1·4651. It was soluble in 1·1 volume of 70 per cent. alcohol.

On continuing the distillation, 2 per cent. of a yellow oil came over between 225° and 235°C. This had specific gravity 0·9285 at 15°, and a refractive index above 1·51. It had an odour

somewhat indicating aromadendral, but when dissolved in chloroform it was dextrorotatory, thus differing from that substance.

EXPLANATION OF PLATES XXVIII.-XXIX.

Eucalyptus parvifolia, sp.nov.(Small-leaved Sally).

Plate xxviii.

Fig. A.—Leaves of seedling.
Fig. B.—Leaves and buds of mature branch.
Fig. C.—Fruiting specimen, showing mature leaves.
Fig. D.—Anthers (enlarged).
Figs. A. and B. nat. size. Fig. C. approximately half nat. size.

Plate xxix.

Group of trees; Kybean, N. S. W.